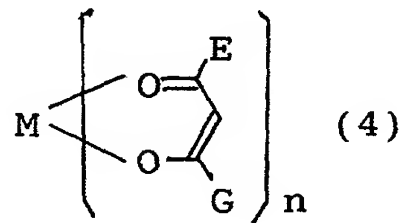
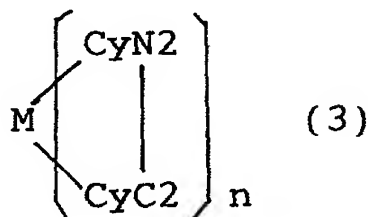
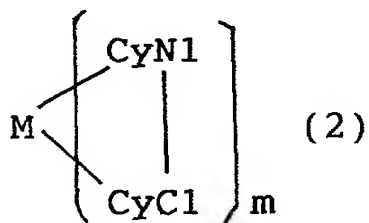


WHAT IS CLAIMED IS:

1. A metal coordination compound represented by formula (1) below:



5 wherein M is a metal atom of Ir, Pt, Rh or Pd; L and L' are mutually different bidentate ligands; m is 1, 2 or 3 and n is 0, 1 or 2 with the proviso that m+n is 2 or 3; a partial structure ML<sub>m</sub> is represented by formula (2) shown below and a partial structure ML'<sub>n</sub> is represented by formula (3) or (4) shown below:



15 wherein CyN1 and CyN2 are each cyclic group capable of having a substituent, including a nitrogen atom and bonded to the metal atom M via the nitrogen atom; CyC1 and CyC2 are each cyclic group capable of having a substituent, including a carbon atom and bonded to the metal atom M via the carbon atom with the proviso that the cyclic group CyN1 and the cyclic group CyC1 are bonded to each other via a covalent bond and the cyclic group CyN2 and the cyclic group CyC2 are bonded to each other via covalent bond;

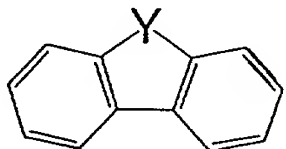
25 the optional substituent of the cyclic groups is selected from a halogen atom, cyano group, a nitro group, a trialkylsilyl group of which the alkyl groups

are independently a linear or branched alkyl group having 1 to 8 carbon atoms, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-,  
5 -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom, or an aromatic group capable of having a substituent (that  
10 is a halogen atom, a cyano atom, a nitro atom, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH-  
15 or -C≡C-, and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom);

E and G are independently a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can include a hydrogen atom that  
20 can be optionally replaced with a fluorine atom, or an aromatic group capable of having a substituent (that is a halogen atom, a cyano atom, a nitro atom, a trialkylsilyl group of which the alkyl groups are  
25 independently a linear or branched alkyl group having 1 - 8 carbon atoms, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group

can include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom; and

at least one of the optional substituent(s) of the cyclic groups, and the cyclic groups CyC1 and CyC2 include an aromatic group capable of having a substituent represented by the following formula (5):



(5)

wherein the aromatic group of the formula (5) is bonded to CyN1, CyN2, CyC1 or CyC2 via a single bond when the aromatic group is the optional substituent(s) of the cyclic groups, and the aromatic group of the formula (5) is bonded to CyN1 or CyN2 via a single bond and bonded to the metal atom M via a single bond when the aromatic group is CyC1 or CyC2;

Y denotes C=O, CRR', C=C(CN)<sub>2</sub>, O or S wherein R and R' are independently a hydrogen atom, a linear or branched alkyl group having 1 to 8 carbon atoms, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen

atom that can be optionally replaced with a fluorine atom, or an aromatic group capable of having a substituent (that is a halogen atom, a cyano atom, a nitro atom, a trialkylsilyl group of which the alkyl groups are independently a linear or branched alkyl group having 1 - 8 carbon atoms, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom); and

the optional substituent of the aromatic group of the formula (5) is selected from a halogen atom, cyano group, a nitro group, a trialkylsilyl group of which the alkyl groups are independently a linear or branched alkyl group having 1 to 8 carbon atoms, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom, or an aromatic group capable of having a substituent (that is a halogen atom, a cyano atom, a nitro atom, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can

include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen atom that can be optionally  
5 replaced with a fluorine atom) with the proviso that an adjacent pair of substituents can be bonded to form a cyclic structure.

2. A metal coordination compound according to  
10 Claim 1, including a partial structure  $ML'_n$  represented by the formula (3) in the formula (1).

3. A metal coordination compound according to  
Claim 1, including a partial structure  $ML'_n$   
15 represented by the formula (4) in the formula (1).

4. A metal coordination compound according to  
Claim 1, wherein n is 0 in the formula (1).

20 5. A metal coordination compound according to  
Claim 1, wherein the group Y in the formula (5) is C=O or CRR'.

6. A metal coordination compound according to  
25 Claim 1, wherein the cyclic groups CyC1 and CyC2 are independently selected from phenyl group, thienyl group, thianaphthyl group, naphthyl group, pyrenyl

group, 9-fluorenonyl group, fluorenyl group,  
dibenzofuryl group, dibenzothienyl group, or  
carbazolyl group, as an aromatic cyclic group capable  
of having a substituent with the proviso that the  
5 aromatic cyclic group can include one or two CH groups  
that can be replaced with a nitrogen atom.

7. A metal coordination compound according to  
Claim 6, wherein the cyclic groups CyC1 and Cy2 are  
10 independently phenyl group or 2-fluorenyl group.

8. A metal coordination compound according to  
Claim 1, wherein the cyclic groups CyN1 and CyN2 are  
independently selected from pyridyl group, pyridazinyl  
15 group, and pyrimidinyl group, as an aromatic cyclic  
group capable of having a substituent.

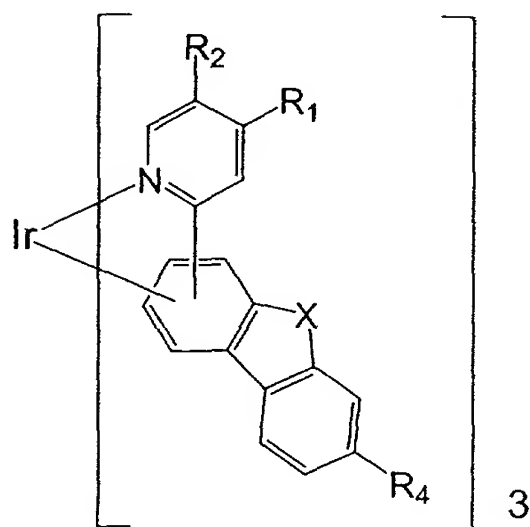
9. A metal coordination compound according to  
Claim 8, wherein the aromatic cyclic group is pyridyl  
20 group.

10. A metal coordination compound according to  
Claim 1, wherein the cyclic groups CyN1, CyN2, CyC1  
and CyC2 are independently non-substituted, or have a  
25 substituent selected from a halogen atom and a linear  
or branched alkyl group having 1 to 20 carbon atoms  
{of which the alkyl group can include one or non-

neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH-, -C≡C-, or a divalent aromatic group capable of having a substituent (that is a halogen atom or a linear or branched alkyl group having 1 to 20 carbon atoms (of which the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-, and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom)), and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom}.

11. A metal coordination compound according to Claim 1, wherein M in the formula (1) is iridium.

12. A metal coordination compound according to Claim 1, which is represented by the following formula (6):



wherein X denotes CRR', O or S where R and R' are independently a linear or branched alkyl group of formula:  $C_nH_{2n+1}$ - in which n is an integer of 1 - 20, the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O- and also can include a hydrogen atom that can be optionally replaced with a fluorine atom;

R2 denotes a hydrogen atom; a fluorine atom; a linear or branched alkyl group of formula:  $C_nH_{2n+1}$ - in which n is an integer of 1 - 20, the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O- and also can include a hydrogen atom that can be optionally replaced with a fluorine atom; a phenyl group capable of having a substituent; a 9,9-dialkylfluorenyl group (of which the alkyl groups are independently a linear or branched alkyl group of formula:  $C_nH_{2n+1}$ - in which n is an integer of 1 - 20, the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O- and also can include a hydrogen atom that can be optionally replaced with a fluorine atom); a dibenzofuranyl group capable of having a substituent; and a dibenzothienyl group capable of having a substituent; the optional substituent of phenyl group, 9,9-dialkylfluorenyl group, dibenzofuranyl group and dibenzothienyl group is a fluorine atom or a linear or



branched alkyl group of formula:  $C_nH_{2n+1}-$  in which n is an integer of 1 - 20, the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O- and also can include a  
5 hydrogen atom that can be optionally replaced with a fluorine atom.

10 13. An electroluminescence device, comprising: a pair of electrodes disposed on a substrate, and a luminescence unit comprising at least one organic compound disposed between the electrodes, wherein the organic compound comprises a metal coordination compound represented by the formula (1) in Claim 1.

15 14. An electroluminescence device according to Claim 13, wherein a voltage is applied between the electrodes to emit light.

20 15. An electroluminescence device according to Claim 13, wherein a voltage is applied between the electrodes to emit phosphorescence.

25 16. A picture display apparatus, comprising an electroluminescence device according to Claim 13, and a means for supplying electric signals to the electroluminescence device.